

ABSTRACT

A method and related ultrasonic meter identify and correct for transit time errors such as peak switch errors. The method includes calculating values for a set of diagnostics from measurements of the fluid flow, including transit time measurements. Based on the values for the diagnostics, and whether and how they fall outside of their respective ranges, the meter can identify a variety of problems with the meter or fluid flow, such as whether there has been an intermittent peak switch, a permanent peak switch, or the presence of noise, velocity pulsation in the fluid flow, temperature stratification, or other problem. In the event there is a problem with the meter, the meter self-tunes in order to minimize the chances of the problem happening again.